

## CLAIMS

1 Sub A1  
2 1. A method for manufacturing a glass or ceramic disk substrate for a rotating disk  
3 drive data storage device, comprising the steps of:

4 providing a ceramic or glass disk substrate having a circumferential edge;  
5 loading said disk substrate to an edge finishing apparatus; and  
6 grinding said circumferential edge of said disk substrate in a ductile grinding  
regime using said edge finishing apparatus.

1 2. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said disk drive data storage device is a rotating magnetic disk drive data storage  
3 device, said disk substrate being subsequently coated with a magnetic coating after said  
4 grinding step.

1 3. The method for manufacturing a glass or ceramic disk substrate of claim 1, further  
2 comprising the step of coarse grinding said circumferential edge in a non-ductile mode,  
3 said step of coarse grinding said circumferential edge in a non-ductile mode being  
4 performed before said step of grinding said circumferential edge in a ductile grinding  
5 regime.

1 4. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said disk substrate contains an outer circumferential edge at the periphery thereof  
3 and a central aperture defining an inner circumferential edge, and wherein said grinding  
4 step is applied to both said outer circumferential edge of said disk substrate and to said  
5 inner circumferential edge.

1 5. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said grinding step comprises grinding said edge with a formed grinding appliance  
3 conforming to an edge radius at said circumferential edge.

1 6. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said grinding step comprises bringing a grinding appliance of said edge finishing  
3 apparatus in contact with said circumferential edge and providing relative motion  
4 between said grinding appliance and circumferential edge of approximately 30 m/sec or  
5 more.

1 7. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said edge finishing apparatus comprises a grinding appliance having diamond  
3 particles of approximately 6 microns or less.

1 8. The method for manufacturing a glass or ceramic disk substrate of claim 1,  
2 wherein said glass or ceramic disk substrate is finished for installation in a disk drive data  
3 storage device without chemical strengthening of said disk substrate.

1 9. The method for manufacturing a glass or ceramic disk substrate of claim 8,  
2 wherein said glass or ceramic disk substrate is of a material which is not chemically  
3 strengthenable.

1 10. A method for manufacturing a glass or ceramic disk substrate for a rotating disk  
2 drive data storage device, comprising the steps of:

3 providing an ceramic or glass disk substrate having a cut, unfinished  
4 circumferential edge, wherein said ceramic or glass disk substrate material is not  
5 chemically strengthenable; and

6 finishing said circumferential edge of said disk substrate to a finished state  
7 suitable for use in a disk drive data storage apparatus using at least one edge finishing  
8 apparatus.

1 11. The method for manufacturing a glass or ceramic disk substrate of claim 10,  
2 wherein said step of finishing said circumferential edge of said disk substrate comprises  
3 grinding said edge in a ductile grinding regime.

1 12. The method for manufacturing a glass or ceramic disk substrate of claim 10,  
2 wherein said disk drive data storage device is a rotating magnetic disk drive data storage  
3 device, said method further comprising the step of coating at least one flat surface of said  
4 disk substrate with a magnetic coating, said coating step being performed after said  
5 grinding step.

1 13. The method for manufacturing a glass or ceramic disk substrate of claim 10,  
2 wherein said disk substrate contains an outer circumferential edge at the periphery thereof  
3 and a central aperture defining an inner circumferential edge, and wherein said finishing  
4 step comprises finishing both said outer circumferential edge of said disk substrate and  
5 said inner circumferential edge.

1 14. The method for manufacturing a glass or ceramic disk substrate of claim 10,  
2 wherein said step of finishing said circumferential edge grinding step comprises forming  
3 an edge radius at said circumferential edge.

1 15. A method for manufacturing a glass or ceramic disk substrate for a rotating disk  
2 drive data storage device, comprising the steps of:  
3 providing a ceramic or glass disk substrate having a cut, unfinished  
4 circumferential edge;  
5 finishing said circumferential edge of said disk substrate to a finished state  
6 suitable for use in a disk drive data storage apparatus by application of mechanical forces  
7 using at least one edge finishing apparatus, said finishing step being accomplished  
8 without chemical strengthening of said glass disk substrate.

1 16. The method for manufacturing a glass or ceramic disk substrate of claim 15,  
2 wherein said disk substrate is of a material which is not chemically strengthenable.

1 17. The method for manufacturing a glass or ceramic disk substrate of claim 15,  
2 wherein said step of finishing said circumferential edge of said disk substrate comprises  
3 grinding said edge in a ductile grinding regime.

1 18. The method for manufacturing a glass or ceramic disk substrate of claim 15,  
2 wherein said disk drive data storage device is a rotating magnetic disk drive data storage  
3 device, said method further comprising the step of coating at least one flat surface of said  
4 disk substrate with a magnetic coating, said coating step being performed after said  
5 grinding step.

1 19. The method for manufacturing a glass or ceramic disk substrate of claim 15,  
2 wherein said disk substrate contains an outer circumferential edge at the periphery thereof  
3 and a central aperture defining an inner circumferential edge, and wherein said finishing  
4 step comprises finishing both said outer circumferential edge of said disk substrate and  
5 said inner circumferential edge.

1 20. The method for manufacturing a glass or ceramic disk substrate of claim 15,  
2 wherein said step of finishing said circumferential edge grinding step comprises forming  
3 an edge radius at said circumferential edge.

1 21. A disk for a rotating disk drive data storage device, comprising a disk-shaped  
2 glass or ceramic substrate which is finished for installation in a disk drive data storage  
3 device, wherein said disk-shaped glass or ceramic substrate is not chemically  
4 strengthened.

1 22. The disk for a rotating disk drive data storage device of claim 21, wherein said  
2 disk-shaped substrate comprises a circumferential edge having a radius.

1 23. The disk for a rotating disk drive data storage device of claim 22, wherein said  
2 disk-shaped substrate has a central aperture defining an inner circumferential edge radius,  
3 and wherein said disk-shaped substrate has a first circumferential edge radius at said inner  
4 circumferential edge, and a second circumferential edge radius at an outer circumferential  
5 edge thereof.

1 24. The disk for a rotating disk drive data storage device of claim 21, further  
2 comprising a magnetic layer for recording magnetically encoded data on at least one  
3 surface of said disk.

1 25. The disk for a rotating disk drive data storage device of claim 21, wherein said  
2 disk-shaped substrate comprises a circumferential edge finished by a process of grinding  
3 in a ductile regime.

1 26. A disk for a rotating disk drive data storage device, comprising a disk-shaped  
2 substrate which is of a glass or ceramic material which is not chemically strengthenable.

1 27. The disk for a rotating disk drive data storage device of claim 26, wherein said  
2 disk-shaped substrate comprises a circumferential edge having a radius.

1 28. The disk for a rotating disk drive data storage device of claim 27, wherein said  
2 disk-shaped substrate has a central aperture defining an inner circumferential edge radius,  
3 and wherein said disk-shaped substrate has a first circumferential edge radius at said inner  
4 circumferential edge, and a second circumferential edge radius at an outer circumferential  
5 edge thereof.

1 29. The disk for a rotating disk drive data storage device of claim 26, further  
2 comprising a magnetic layer for recording magnetically encoded data on at least one  
3 surface of said disk.

1 30. The disk for a rotating disk drive data storage device of claim 26, wherein said  
2 disk-shaped substrate comprises a circumferential edge finished by a process of grinding  
3 in a ductile regime.

1 31. A disk for a rotating disk drive data storage device, comprising a disk-shaped  
2 substrate which is of a glass or ceramic material, said disk-shaped substrate having a flat  
3 data recording surface and a circumferential edge radius at a circumferential edge of said  
4 flat data recording surface.

1 32. The disk for a rotating disk drive data storage device of claim 31, wherein said  
2 circumferential edge radius is at least 0.175 mm.

1 33. The disk for a rotating disk drive data storage device of claim 31, wherein said  
2 circumferential edge radius is approximately one-half the width of said disk-shaped  
3 substrate at the circumferential edge thereof, said substrate having an edge cross-section  
4 in a plane of the disk axis comprising approximately a semi-circle.

1 34. The disk for a rotating disk drive data storage device of claim 31, wherein said  
2 disk-shaped substrate has a central aperture defining an inner circumferential edge radius,  
3 and wherein said disk-shaped substrate has a first circumferential edge radius at said inner  
4 circumferential edge, and a second circumferential edge radius at an outer circumferential  
5 edge thereof.

1 35. The disk for a rotating disk drive data storage device of claim 31, further  
2 comprising a magnetic layer for recording magnetically encoded data on said flat data  
3 recording surface.

1 36. The disk for a rotating disk drive data storage device of claim 31, wherein said  
2 disk-shaped substrate is of a material which is not chemically strengthened.

1 37. The disk for a rotating disk drive data storage device of claim 36, wherein said  
2 disk-shaped substrate is of a material which is not chemically strengthenable.

1 38. The disk for a rotating disk drive data storage device of claim 31, wherein said  
2 circumferential edge is finished by a process of grinding in a ductile regime.

1 39. A rotating disk drive data storage device, comprising:  
2 a disk drive base;  
3 a rotatably mounted disk and spindle assembly, said disk and spindle assembly  
4 comprising at least one disk for recording data on at least one surface of said at least one  
5 disk, said at least one disk comprising a glass or ceramic substrate which is not  
6 chemically strengthened; and  
7 at least one transducer mechanism for accessing data recorded on said at least one  
8 surface of said at least one disk.

1 40. The rotating disk drive data storage device of claim 39, wherein said glass or  
2 ceramic substrate is of a material which is not chemically strengthenable.

1 41. The rotating disk drive data storage device of claim 39, wherein said at least one  
2 disk further comprises a magnetic layer for recording magnetically encoded data on said  
3 at least one surface of said at least one disk.

1 42. The rotating disk drive data storage device of claim 39, wherein said at least one  
2 disk comprises a circumferential edge having a radius.

1 43. The rotating disk drive data storage device of claim 39, wherein said at least one  
2 disk comprises a circumferential edge which is finished by a process of grinding in a  
3 ductile regime.

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